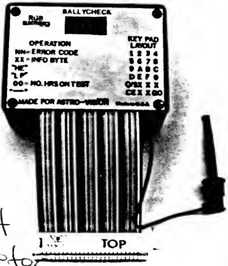
12/15/82



this change if not implemented in Tester will give you 03 error or Checksum error - in test of System Rom - anyone whom need's the Prom Reburned I'll do it for Free Just Pay $250 for Shipping & handling -

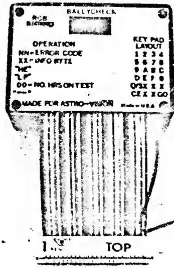
(The Only Difference between System I & II in the Gun Fighter game I 99 - # II 9999 - # of games)

Bob For everyone whom May be interisted! The Difference in The Old Bally System I Rom, & New System II ROM. Listings changes; Are for the Ballycheck. Rom Tester listing only - NOT the Bally or Astrocade

old Syst I New System II
211D: 08 old listing
: 20 New listing
212D: FF old -
: A4
2130: 01 00 08 old
: C3 4A 21 New

Nitron is Now Using the Tester All New Astrocade the boarder on the Menue - and "Astrocade inc. copyright 1982" on the bottom of the Menu. This will Also require changes in Ballycheck System ROM listings changes I haven't received them yet. Will send you the changes as soon as possiable

Dick Belton.



↑ 1# System RAM Test
↓ #2 System ROM

HOME VIDEO GAME BURN-IN TESTER

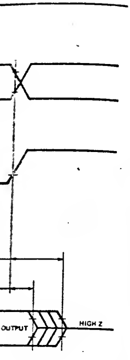
The BALLYCHECK Burn-In Tester performs functional as well as static test on the operation of the(BALLY)-ASTROCADE home video game. The functional test performed check for correct operation of system ROM(read only memory), RAM (random access memory) and CUSTOM CHIP functions as data shift,flip-flop, expand,OR and XOR. Static tests performs exercise all the system I/O ports by reading and writing to them. Included in the tester are 8 routines to enable the user to generate constant CPU signals for checking data and control logic circuitry, monitor activity on system input ports, generate color display, and enter a program directly into system RAM for execution. While the Burn-in tester is in operation the LED display on the tester module will blink the following; NN-error code number,(possible error codes,key pad, screen interrupt,ROM checksum,RAM,shifter,rotator(not implemented),flopper, or,xor,or intercept,xor intercept,expander,trigger/joystick&pot ERRORS. XX-Information Byte gives information to held isolate the error condition There is in the BALCHECK manual the error codes description sheets for more detailed information. Also while the Burn-In tester is running the user can access the special routines by pressing one of 8 keys,#I memory read routine #2 memory write, #3 input port read, #4 output port write, #5 memory read & write routines, #6 display all input devices to screen, #7 Rainbow color display all possible colors, #8 enter machine code from key pad layout shown in picture above. The BALLYCHECK Manual has further discription sheete for details on individual routines. These routines are so thorough for example The functional RAM test checks for bad bits in the RAM array they use a pattern starting with"I" and ending with"80H" is written into RAM (the complment is also written) and checked that the correct pattern was stored, and the information displayed on the LED'S and checked with the manual can tell you witch RAM chip is bad. On the other hand if the CPU's stack doesn't know where to go the system is locked up and the tester will read FF, so it won't always tell you what's wrong but 99% of the time it's FANTASTIC!!!! I've sold over 200 BALLYCHECK Testers even NITRON, division of ASTROCADE. The cost of a BALLYCHECK TESTER, is $80.00 each & $5.50 for shipping and handling. THE BALLYCHECK MANUAL, is $7.00 each & $1.50 for S&H and both are ready for immedaate delivery. Call or write for more details.

RGB ELECTRONICS.
Richard G. Belton
4906 Willshire Ave.
Baltimore,MD. 21206
ph #(301)488-2806

Also avilable is the DAVE NUTTING ENGINEERING MANUAL for the (Bally) Astrocade,a 300 page manual of list-of ROM, timing pulses, schematics Music gen. all phases of the Game. DAVE NUTTING MANUAL $30.00 & $2.50

S&H. These manualls are also available from Bob Fabris of the "ARCADIAN".

Ballycheck . OWNERS; modification update, Now use Ballycheck to test System ROM'S 1&2



cedure (see Data Catalog uctions Section) for the ortwave ultraviolet light Angstroms (Å). The inte- exposure time) for erasure ec/cm². The erasure time 15 to 20 minutes using an W/cm² power rating. The inch of the lamp tubes e a filter on their tubes rasure.

intel® Burn your own Chip or modification will be made for $19.50 + 2.50 S&H or 2732 bur 2716 for $10.50+2.50 S&H

2716 16K (2K × 8) UV ERASABLE PROM

- **Fast Access Time**
  - — 350 ns Max. 2716-1
  - — 390 ns Max. 2716-2
  - — 450 ns Max. 2716
  - — 490 ns Max. 2716-5
  - — 650 ns Max. 2716-6
- **Single +5V Power Supply**
- **Low Power Dissipation**
  - — 525 mW Max. Active Power
  - — 132 mW Max. Standby Power
- **Pin Compatible to Intel® 2732 EPROM**
- **Simple Programming Requirements**
  - — Single Location Programming
  - — Programs with One 50 ms Pulse
- **Inputs and Outputs TTL Compatible during Read and Program**
- **Completely Static**

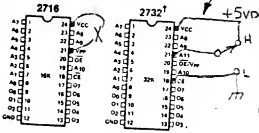
The Intel® 2716 is a 16,384-bit ultraviolet erasable and electrically programmable read-only memory (EPROM). The 2716 operates from a single 5-volt power supply, has a static standby mode, and features fast single address location programming. It makes designing with EPROMs faster, easier and more economical.

The 2716, with its single 5-volt supply and with an access time up to 350 ns, is ideal for use with the newer high performance +5V microprocessors such as Intel's 8085 and 8086. A selected 2716-5 and 2716-6 is available for slower speed applications. The 2716 is also the first EPROM with a static standby mode which reduces the power dissipation without increasing access time. The maximum active power dissipation is 525 mW while the maximum standby power dissipation is only 132 mW, a 75% savings.

The 2716 has the simplest and fastest method yet devised for programming EPROMs – single pulse TTL level programming. No need for high voltage pulsing because all programming controls are handled by TTL signals. Program any location at any time–either individually, sequentially or at random, with the 2716's single address location programming. Total programming time for all 16,384 bits is only 100 seconds.

X=Cut foil

PIN CONFIGURATION



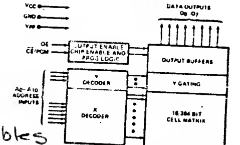
†Refer to 2732 data sheet for specifications

USE 2732 & Add Wiring & SWITCH

MODE SELECTION

MODE \ PINS	$\overline{CE}$/PGM (18)	$\overline{OE}$ (20)	V_{PP} (21)	V_{CC} (24)	OUTPUTS (9-11, 13-17)
Read	V_{IL}	V_{IL}	+5	+5	D_{OUT}
Standby	V_{IH}	Don't Care	+5	+5	High Z
Program	Pulsed V_{IL} to V_{IH}	V_{IH}	+25	+5	D_{IN}
Program Verify	V_{IL}	V_{IL}	+25	+5	D_{OUT}
Program Inhibit	V_{IL}	V_{IH}	+25	+5	High Z

BLOCK DIAGRAM



System = Bally-Astrocade GAMES

PIN NAMES

A_0–A_{10}	ADDRESSES
$\overline{CE}$/PGM	CHIP ENABLE/PROGRAM
$\overline{OE}$	OUTPUT ENABLE
O_0–O_7	OUTPUTS

To read 2732 (L) @ A11 enables Low order address & (H) @ A11 enables High order adress of 2732

System 1 ROM (L) = Old Games [GUNFIGHTER Score = 0-99 also Menu reads (bottom) (c) Bally Mfg (1977)]

System 2 ROM (H) = New Games [GUNFIGHTER Score = 0-9999 also Menu reads (bottom) (c) Bally Mfg (1978)

on Repairs over 200 units repaired only one
return to be re-repaired & RF Mod Failed! 5/15/83

Bob.

If you would when you can
please Run the Add. for the Bally
Check. Now Able to test system 1&2
ROMS. Also updates for all old Ballycheck's
Also.> Under Repairs BALLY-ASTROCADE Repairs still $30.00
& 5.50 for S&H 1 week or less turn
OVER. 90 Day gurantee on work performed.
Also. All parts avialable including All
plastic parts. call for prices; List too
Long! Joysticks repaired $5.50 + parts &
$2.50 S&H. Now Avialable Bally Working
boards for Sale $80.00 Limited Supply.
Will include plastic Casett deck /with
Keyboard. (Pads) Also I will update your
bally check for Cost of 2732. Do you charge
for Adds if So. Bill Me, And I would
~~End~~ Like to run one every month Simulato
Home Arcade! Just haven't had time to
type this up. Let me know What You Can
do thanks Don't forget 25 Munchie
Cartaroges - thanks -